

REMARKS

Claims 15-22 remain in this application. Claims 15-17 and 19-22 have been amended.

Claims 16 and 20 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirements. The Office Action alleges that the claimed feature regarding the storing of a second set of deviations obtained independently of the first set of deviations is not supported in the specification.

Amended claims 16 and 20 are directed to novel combinations of features including storing a second set of deviations obtained independently of the first set of deviations by turning the boom through incremental turning angles about a second one of said one or more joint axes of one or more respective joints from a reference position to predetermined angularly spaced intervals about said second one of said one or more joint axes. Applicants respectfully submit that these claimed features are supported in the specification at paragraph 0015, wherein it is disclosed that when deviations according to a joint turning angle have been defined related to one joint axis, they are then defined in a corresponding manner for the turning angles of the other joint axis of the same joint. Accordingly, applicants respectfully submit that the originally filed specification provides sufficient support for all of the claimed features in claims 16 and 20. Withdrawal of the rejection under 35 U.S.C. §112, first paragraph, is therefore respectfully requested.

Claims 15-22 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Applicants respectfully submit that the above amendments to the claims now clarify that the boom is turnable about one or more joint axes of one or more

respective joints, and that the boom is turned through incremental turning angles about one of said joint axes. Accordingly, applicants respectfully submit that all claims provide proper antecedent basis for all claimed features, and are therefore in compliance with 35 U.S.C. §112, second paragraph. Withdrawal of all rejections under 35 U.S.C. §112, second paragraph, is therefore respectfully requested.

Claims 15-22 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 5,383,524 (Rinnemaa).

Independent claim 15 is directed to a method for correcting positioning errors in rock drilling occurring in a drilling rig comprising a boom and a rock drill, the boom attached at one end thereof to a carrier and being turnable in relation to it about one or more joint axes of one or more respective joints. As described in the specification at paragraph [0014], the boom is subjected to various movements until the boom is in a desired set position, wherein a deviation of the boom's actual turning angle about one of said joint axes from a desired turning angle about said one of said joint axes is measured using a movement sensor, and the boom's position is corrected on the basis of the measured deviation. A first set of deviations obtained by turning the boom through incremental turning angles about said one of said joint axes from a reference position to predetermined angularly spaced intervals about said one of said joint axes, are stored in a memory. A movement sensor measures, for each such interval, a deviation of the boom position from a desired incremental turning angle. The stored first set of deviations are then used during a subsequent drilling operation as correction values for locating the boom

at the desired incremental turning angles corresponding to the respective predetermined angularly spaced intervals about said one of said joint axes.

In contrast to the above-described novel combination of features claimed in amended independent claim 15, *Rinnemaa* discloses rock drilling equipment in which the inclination of a feeding beam with respect to the force of gravity is measured by means of two sensors in two planes perpendicular to each other. The equipment comprises a calculator which calculates an error or a difference between the angle value obtained by the sensor and the actual inclination of the feeding beam. *Rinnemaa* does not disclose a method for correcting positioning errors in rock drilling wherein a first set of deviations are stored in a memory, and the first set of deviations are obtained by turning the boom through incremental turning angles about one of said joint axes from a reference position to predetermined angularly spaced intervals about said one of said joint axes, and measuring using a movement sensor, for each such interval, a deviation of the boom position from a desired incremental turning angle. *Rinnemaa* also does not disclose using the above-described stored first set of deviations during a subsequent drilling operation as correction values for locating the boom at the desired incremental turning angles corresponding to the respective predetermined angularly spaced intervals about said one of said joint axes.

For at least the above reasons, applicants respectfully submit that *Rinnemaa* does not identically disclose or suggest the novel combinations of features claimed in amended independent claim 15, and hence dependent claims 16-18.

Amended independent claim 19 is directed to a rock drilling apparatus comprising a novel combination of features that includes a carrier, a boom having a first end attached

to the carrier and turnable about respective joints in relation to the carrier, a rock drill attached turnable to the other end of the boom, joint sensors indicating the positions of the boom joints, and control devices for controlling the boom for movement to a drilling position for drilling a hole. A memory device stores a first set of deviations obtained by turning the boom through incremental turning angles about a first joint axis of the joints from a reference position to predetermined angularly spaced intervals about said first joint axis of the joints, and a movement sensor is used for measuring a deviation of the boom position from a desired position for each of said angularly spaced intervals. A calculating device is further provided, operable during a drilling operation for using the stored first set of deviations as correction values for locating the boom in the desired position corresponding to the respective intervals about the first joint axis.

In contrast to the above-described novel combination of features claimed in amended independent claim 19, the only memory device disclosed in *Rinnemaa*, at column 7, lines 54-59, is provided for storing values indicative of the inclination of the carrier as obtained directly from the inclination sensors of the feeding beam in the longitudinal and transverse planes of the carrier. Correction calculations needed in the positioning of the feeding beam and the boom are made on the basis of the inclination values of the carrier set in the memory as long as the carrier is not displaced. Accordingly, applicants respectfully submit that *Rinnemaa* clearly does not disclose a memory device for storing a first set of deviations obtained by turning the boom through incremental turning angles about a first joint axis of the joints from a reference position to predetermined angularly spaced intervals about said first joint axis of the joints. Furthermore, the Office Action contends

that *Rinnemaa* measures errors by calculating the deviation of the location of the beam. Accordingly, *Rinnemaa* clearly does not disclose measuring using a movement sensor in order to determine a deviation of the boom position from a desired position at each of predetermined angularly spaced intervals.

For at least the above reasons, applicants respectfully submit that amended independent claim 19, and hence dependent claims 20-22, are neither identically disclosed nor suggested by *Rinnemaa*. Therefore, withdrawal of all rejections of claims 15-22 under 35 U.S.C. §102(b) is respectfully requested.

Prompt issuance of a Notice of Allowance is earnestly solicited. In the event any questions arise regarding this communication or the application in general, please contact applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

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Date: November 6, 2003